

REMARKS

Claims 1-31 are pending in this application. Claims 11, 12, 25 and 30 were withdrawn from consideration as a result of Applicants' response of April 5, 2006. Claims 1-10, 13-20, 22-24 and 26-29 were rejected in the office action dated June 29, 2006. Claim 21 was objected to in the office action dated June 29, 2006.

Claims 10 and 22 are hereby amended to more clearly state that the steps of annealing the BST material are not performed between the steps of forming the BST thin film material, and the steps of forming the top electrode.

Claim 21 is hereby amended to an independent claim including the limitations of claim 10.

Claim 31 is hereby added merely to more specifically define inherent aspects of the invention as originally claimed. No new matter is introduced by the amendment.

Claims 1, 10 and 22 are the pending independent claims.

Reconsideration of this application as amended, and allowance of all pending elected claims, claims 1-10, 13-24, 26-29 and 31 as amended, are hereby respectfully requested.

The Office Action has not made a prima facie case that Nakata is prior art.

Claims 1-10, 13-20, 22-24 and 26-29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakata (Pub. No. 2004/0087082) in view of Olewine et al. (Pub. No. 2003/0067023), sometimes in combination with additional secondary references. This rejection is respectfully traversed.

All rejections rely on Nakata as the primary reference. However, it has not been established that Nakata qualifies as prior art. The current application claims priority under 35

U.S.C. § 120 to U.S. Patent Appl. No. 10/144,185 (the '185 application, currently issued as U.S. Patent No. 6,683,341), which has a filing date of May 10, 2002. Elected pending claims 1-10, 13-24, 26-29 and 31 are supported, for example, by FIGS. 4A-4C and the related text of the '185 application. Therefore, the current application is entitled to a filing date of May 10, 2002. Nakata was filed on Mar. 10, 2003, which is too late to qualify as prior art under 35 U.S.C. §102(e). Accordingly, Applicants respectfully request that Nakata be withdrawn as prior art and that all elected pending claims 1-10, 13-24, 26-29 and 31 as amended be allowed on this basis.

Nakata and Olewine et al. also do not teach or suggest forming a top electrode *immediately after* producing the BST thin film material or the lateral shape thereof

Independent claims 10 and 22 were rejected under 35 U.S.C. §103(a) as being unpatentable over Nakata in view of Olewine et al. In addition to the reason given above, this rejection is respectfully traversed for the following additional reason.

Claim 10 as amended recites “forming a top electrode over the BST thin film dielectric region . . . *immediately after producing* the BST thin film material *but before annealing* the BST thin film material . . .” Similarly, claim 22 recites “forming a top electrode over the BST thin film dielectric region . . . *before annealing* the BST material and either *immediately after* the BST material is produced or *immediately after* the lateral shape of the BST thin film dielectric region is formed.” This feature is beneficial because the BST material is protected by the top electrode material during the subsequent processing steps (possibly but not necessarily including the step of annealing the BST material). Therefore, in the claimed inventions, the BST material

degrades less, and also results in a higher quality interface between the BST thin film and the top electrode.

These claimed features of the present invention are not shown or suggested by any of the cited references taken either alone or in combination. Nakata discloses forming the top electrode *after* removing both the dielectric layer 5 and the metal oxide layer 4 by selective etching. Nakata does not disclose or suggest forming the top electrode *immediately after producing* the BST thin film or the lateral shape of the BST thin film dielectric.

Likewise, Olewine et al. discloses depositing 78 the top electrode *after* plasma annealing 76 the dielectric layer. Therefore, Olewine et al. does not disclose or suggest forming the top electrode layer *before annealing* the BST thin film material and *immediately after producing* the BST thin film or the lateral shape of the BST thin film dielectric.

Nor is there any suggestion or instruction in any of the cited references for combining these disclosures, as the Examiner contends, in any way that would yield Applicants' invention of claim 10 or 22.

Accordingly, Applicants respectfully submit that claims 10 and 22, and their dependent claims 13-21, 23, 24, 26-29, and 31 as amended are patentable for the additional reason that they are patentably distinct from the cited references.

Claims 21 is rewritten in independent form

Dependent claim 21 was objected to as dependent upon a rejected base claim, but allowable if rewritten in independent form. Independent claim 21 is hereby amended to include the limitations of claim 10. Therefore, Applicants respectfully submit that claim 21 is now allowable.

Closing

For the reasons given above, Applicants believe that the application is in condition for allowance of all claims herein, claims 1-10, 13-24, 26-29 and 31 as amended, and therefore an early Notice of Allowance is respectfully requested. If the Examiner believes that for any reason direct contact with Applicants' attorney would help advance the prosecution of this case to finality, the Examiner is invited to telephone the undersigned at the number given below.

Respectfully submitted,

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